What is claimed is:

1. A monolithic ink-jet printhead, comprising:

a substrate having an ink chamber to be supplied with ink to be ejected, a manifold for supplying ink to the ink chamber, and an ink channel in communication with the ink chamber and the manifold;

a nozzle plate including a plurality of passivation layers stacked on the substrate and a heat dissipating layer stacked on the plurality of passivation layers;

a nozzle, including a lower part and an upper part, the nozzle penetrating the nozzle plate so that ink ejected from the ink chamber is ejected through the nozzle;

a heater provided between adjacent passivation layers of the plurality of passivation layers of the nozzle plate, the heater being located above the ink chamber for heating ink within the ink chamber; and

a conductor between adjacent passivation layers of the plurality of passivation layers of the nozzle plate, the conductor being electrically connected to the heater for applying current to the heater,

wherein the heat dissipating layer is made of a thermally conductive metal for dissipating heat from the heater, the lower part of the nozzle is formed by penetrating the plurality of passivation layers, and the upper part of the nozzle is formed by penetrating the heat dissipating layer in a tapered shape in which a cross-sectional area thereof decreases gradually toward an exit thereof.

2. The printhead as claimed in claim 1, wherein the plurality of passivation layers include first, second, and third passivation layers sequentially stacked on the substrate, the heater is formed between the first and second passivation layers, and the conductor is formed between the second and third passivation layers.

3. The printhead as claimed in claim 1, wherein the lower part of the nozzle has a cylindrical shape.

4. The printhead as claimed in claim 1, wherein the heat dissipating layer is formed by electroplating to a thickness of about 10-50 μm, and the upper part of the nozzle has a length of about 10-50 μm.

5. The printhead as claimed in claim 1, wherein the heat dissipating layer is made of a transition element metal.

6. The printhead as claimed in claim 5, wherein the transition element is nickel or gold.

7. The printhead as claimed in claim 1, wherein the nozzle plate has a heat conductive layer located above the ink chamber, the heat conductive layer being insulated from the heater and the conductor and thermally contacts the substrate and the heat dissipating layer.

8. The printhead as claimed in claim 7, wherein the heat conductive layer is made of a metal.

9. The printhead as claimed in claim 7, wherein the conductor and the heat conductive layer are made of the same metal and located on the same passivation layer.

10. The printhead as claimed in claim 7, further comprising:

an insulating layer interposed between the conductor and the heat conductive layer.

11. The printhead as claimed in claim 1, further comprising:

a nozzle guide extending into the ink chamber formed in the lower part of the nozzle.

12. A method for manufacturing a monolithic ink-jet printhead, comprising:

(a) preparing a substrate;

(b) stacking a plurality of passivation layers on the substrate and forming a heater and a conductor connected to the heater between adjacent passivation layers of the plurality of passivation layers;

(c) forming a heat dissipating layer made of a metal on the plurality of passivation layers, forming a lower nozzle on the passivation layers, and forming an upper nozzle on the heat dissipating layer in a tapered shape in which a cross-sectional area thereof decreases gradually toward an exit to construct a nozzle plate including the passivation layers and the heat dissipating layer integrally with the substrate; and

(d) etching the substrate to form an ink chamber to be supplied with ink, a manifold for supplying ink to the ink chamber, and an ink channel for connecting the ink chamber with the manifold.

13. The method as claimed in claim 12, wherein in (a), the substrate is made of a silicon wafer.

14. The method as claimed in claim 12, wherein (b) comprises:

forming a first passivation layer on an upper surface of the substrate;

forming the heater on the first passivation layer;

forming a second passivation layer on the first passivation layer and the heater;

forming the conductor on the second passivation layer; and

forming a third passivation layer on the second passivation layer and the conductor.

15. The method as claimed in claim 12, wherein in (b), a heater conductive layer located above the ink chamber is formed between the passivation layers, whereby the heat conductive layer is insulated from the heater and conductor and contacts the substrate and heat dissipating layer.

16. The method as claimed in claim 15, wherein the heat conductive layer is formed by depositing a metal to a predetermined thickness using a sputtering method.

17. The method as claimed in claim 15, wherein the heat conductive layer and the conductor are simultaneously formed from the same metal.

18. The method as claimed in claim 15, wherein after forming an insulating layer on the conductor, the heater conductive layer is formed on the insulating layer.

19. The method as claimed in claim 12, wherein (c) comprises:

etching the passivation layers on the inside of the heater to form the lower nozzle;

forming a first sacrificial layer within the lower nozzle;

forming a second sacrificial layer for forming the upper nozzle on the first sacrificial layer in a tapered shape;

forming the heat dissipating layer on the passivation layers by electroplating; and

removing the second sacrificial layer and the first sacrificial layer to form a nozzle having the lower nozzle and the upper nozzle.

20. The method as claimed in claim 19, wherein the lower nozzle is formed in a cylindrical shape by dry etching the passivation layers using reactive ion etching (RIE).

21. The method as claimed in claim 19, wherein the first and second sacrificial layers are made from photoresist.

22. The method as claimed in claim 21, wherein forming the second sacrificial layer comprises:

inclininingly patterning the photoresist by a proximity exposure for exposing the photoresist using a photomask which is inclined to be separated from a surface of the photoresist by a predetermined distance.

23. The method as claimed in claim 22, wherein an inclination of the second sacrificial layer is adjusted by a space between the photomask and the photoresist and an exposure energy.

24. The method as claimed in claim 19, further comprising:

forming a seed layer for electroplating of the heat dissipating layer on the first sacrificial layer and the passivation layers, prior to formation of the second sacrificial layer.

25. The method as claimed in claim 24, wherein after forming a seed layer for electroplating of the heat dissipating layer on the passivation layers, the first sacrificial layer and the second sacrificial layer are formed integrally with each other.

26. The method as claimed in claim 19, wherein the heat dissipating layer is made of a transition element metal of including nickel and gold.

27. The method as claimed in claim 19, wherein the heat dissipating layer is formed to a thickness of about 10-50 μm.

28. The method as claimed in claim 19, further comprising planarizing an upper surface of the heat dissipating layer by chemical mechanical polishing (CMP) after forming the heat dissipating layer.

29. The method as claimed in claim 19, wherein the formation of the lower nozzle comprises:

anisotropically etching the passivation layers and the substrate within an area of the heater to form a hole of a predetermined depth;

depositing a predetermined material layer on an inner surface of the hole; and

etching the material layer formed at a bottom of the hole to expose the substrate while at the same time forming a nozzle guide made of the material layer for defining the lower nozzle along a sidewall of the hole.

30. The method as claimed in claim 12, wherein (d) comprises:

etching the substrate exposed through the nozzle to form the ink chamber;

etching a rear surface of the substrate to form the manifold; and

forming the ink channel by etching the substrate so that it penetrates the substrate between the manifold and the ink chamber.